

Figure 1: Self Addressing Microlocations
(Microlithographic Fabrication)

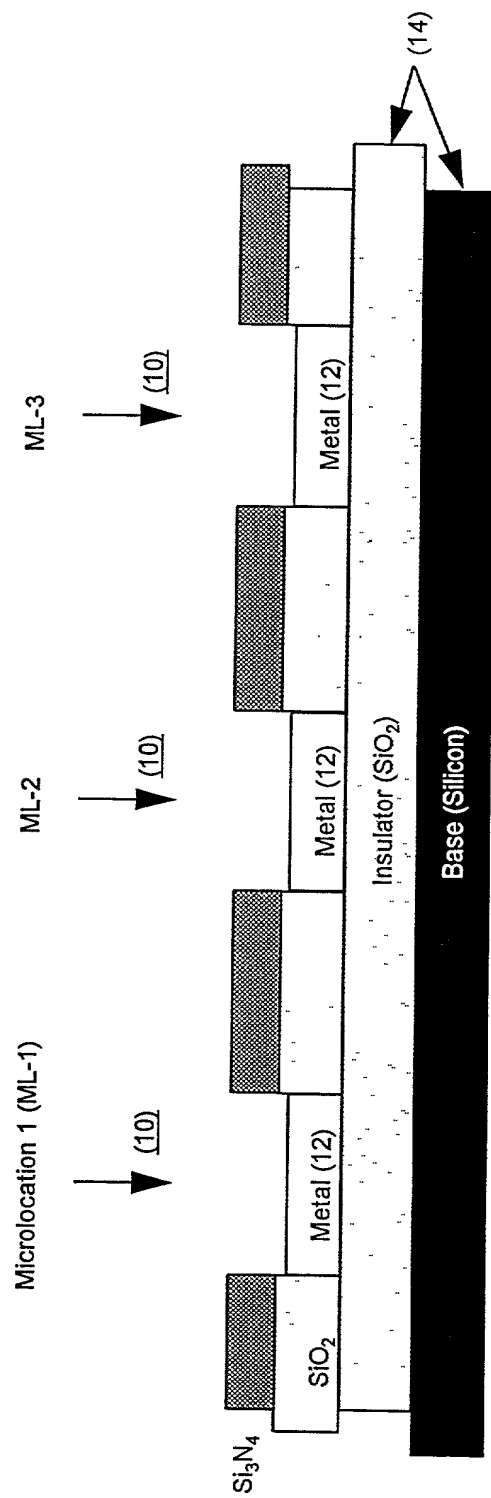


Figure 2: Microlocation Design Features

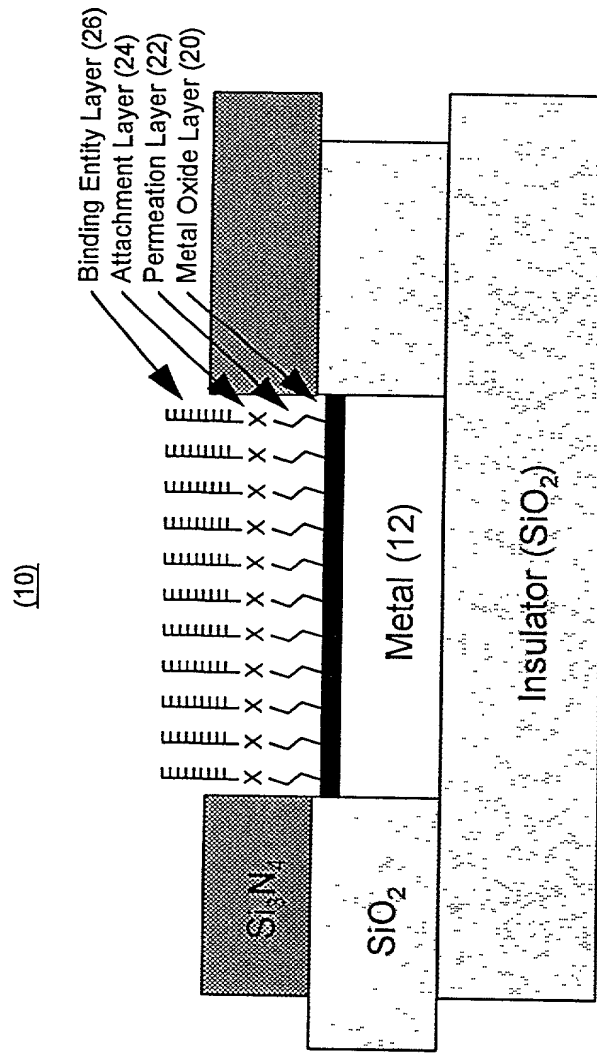


Figure 3: Self-Addressable 64 Microlocation Chip

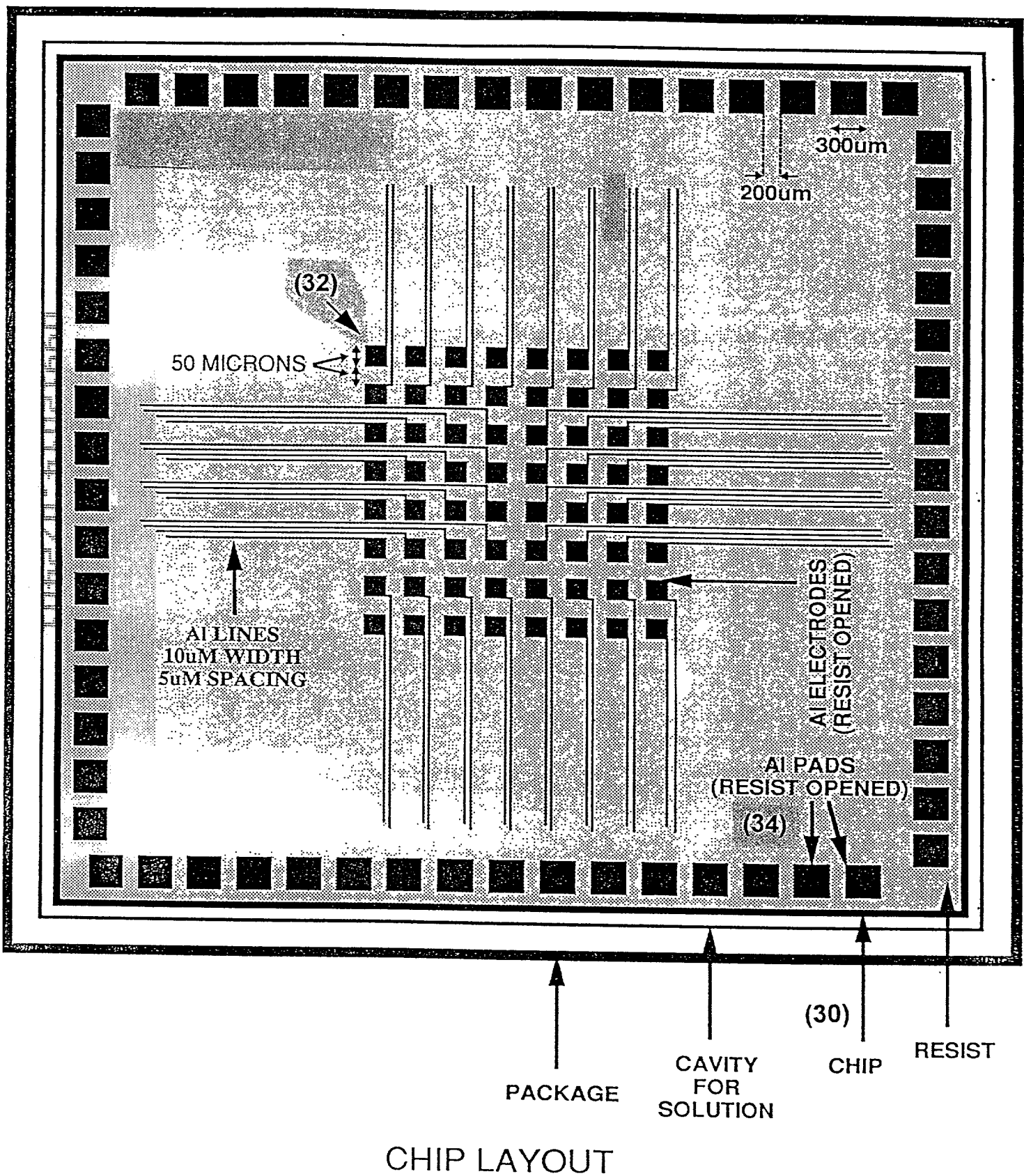


Figure 4: DNA Attachment Chemistry

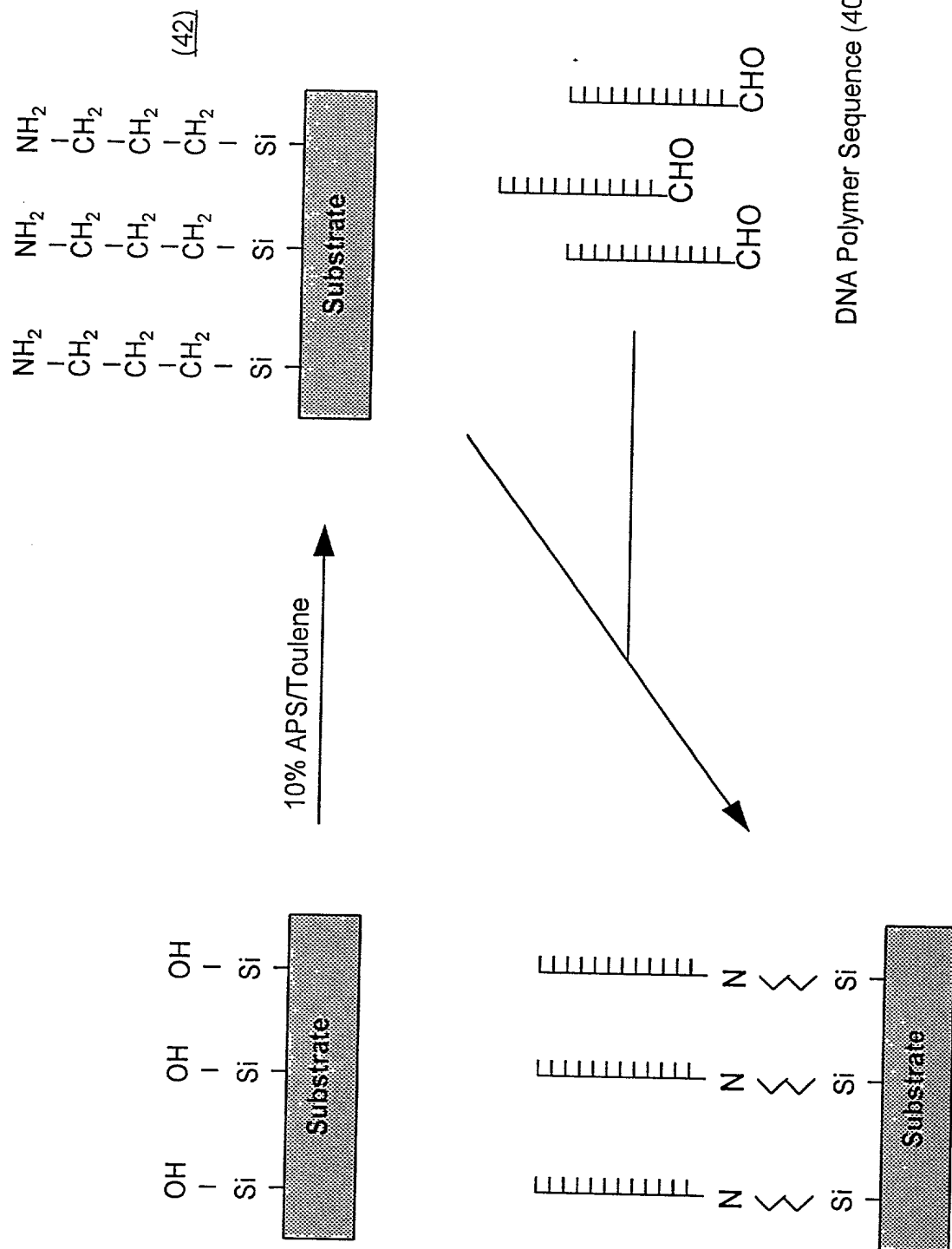


Figure 5: Micro-Machined Device (Exploded View)

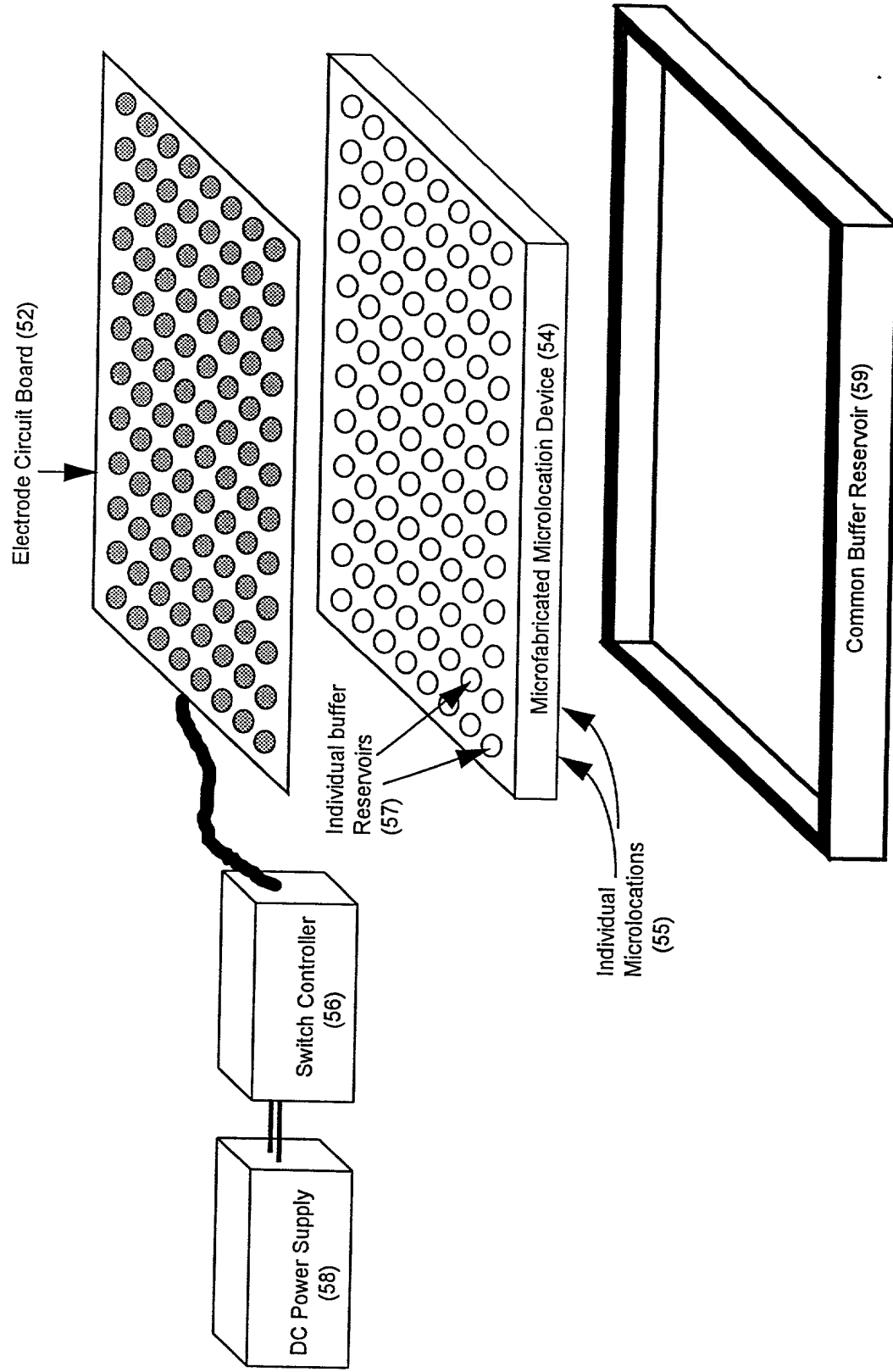


Figure 6: Micro-Machined Device (Cross-Section)

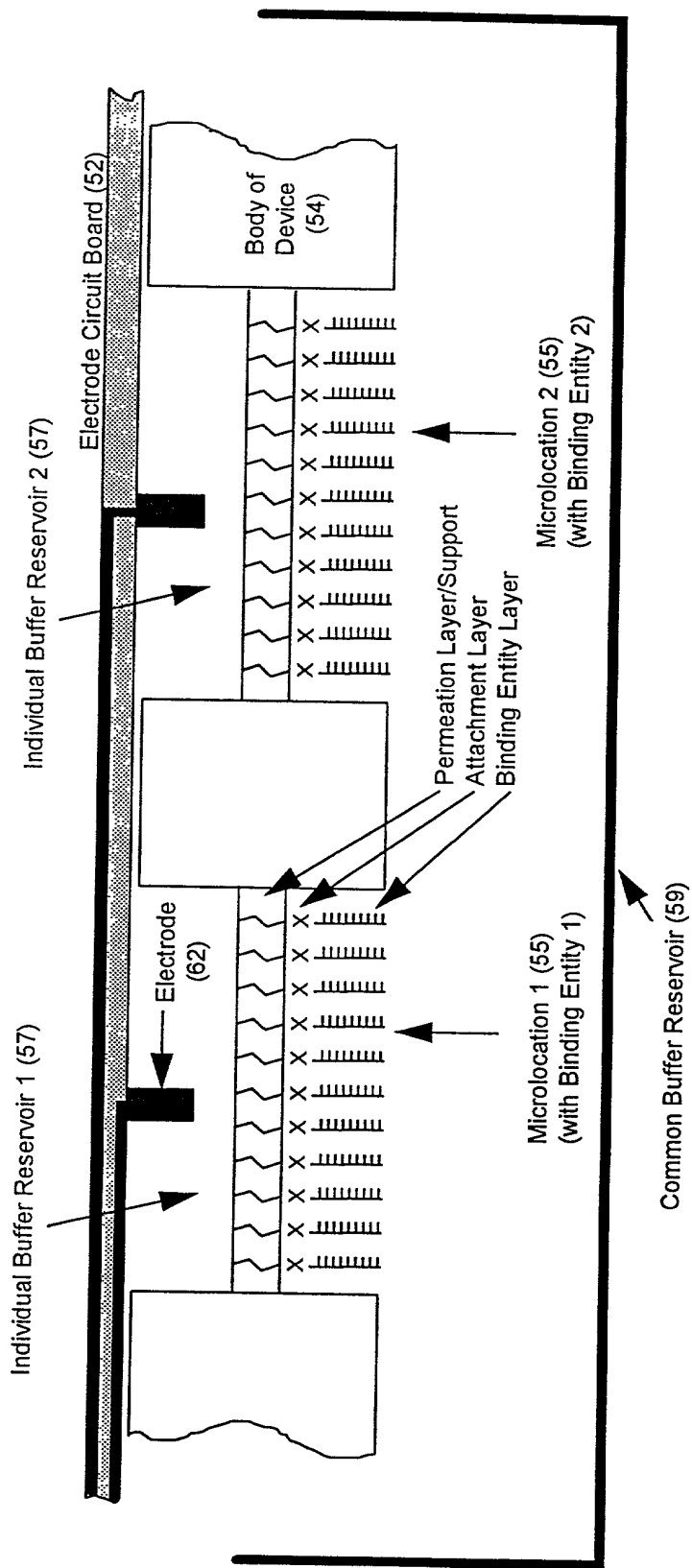


Figure 7: Electronically Controlled Concentration Effect

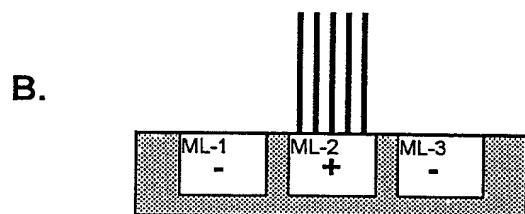
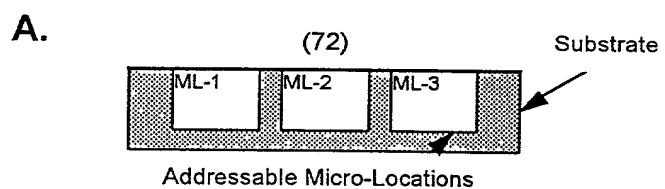
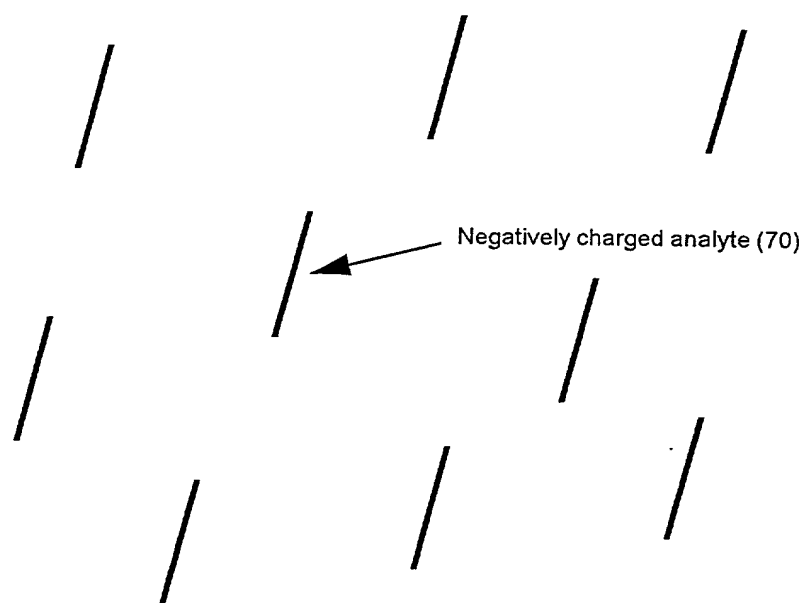
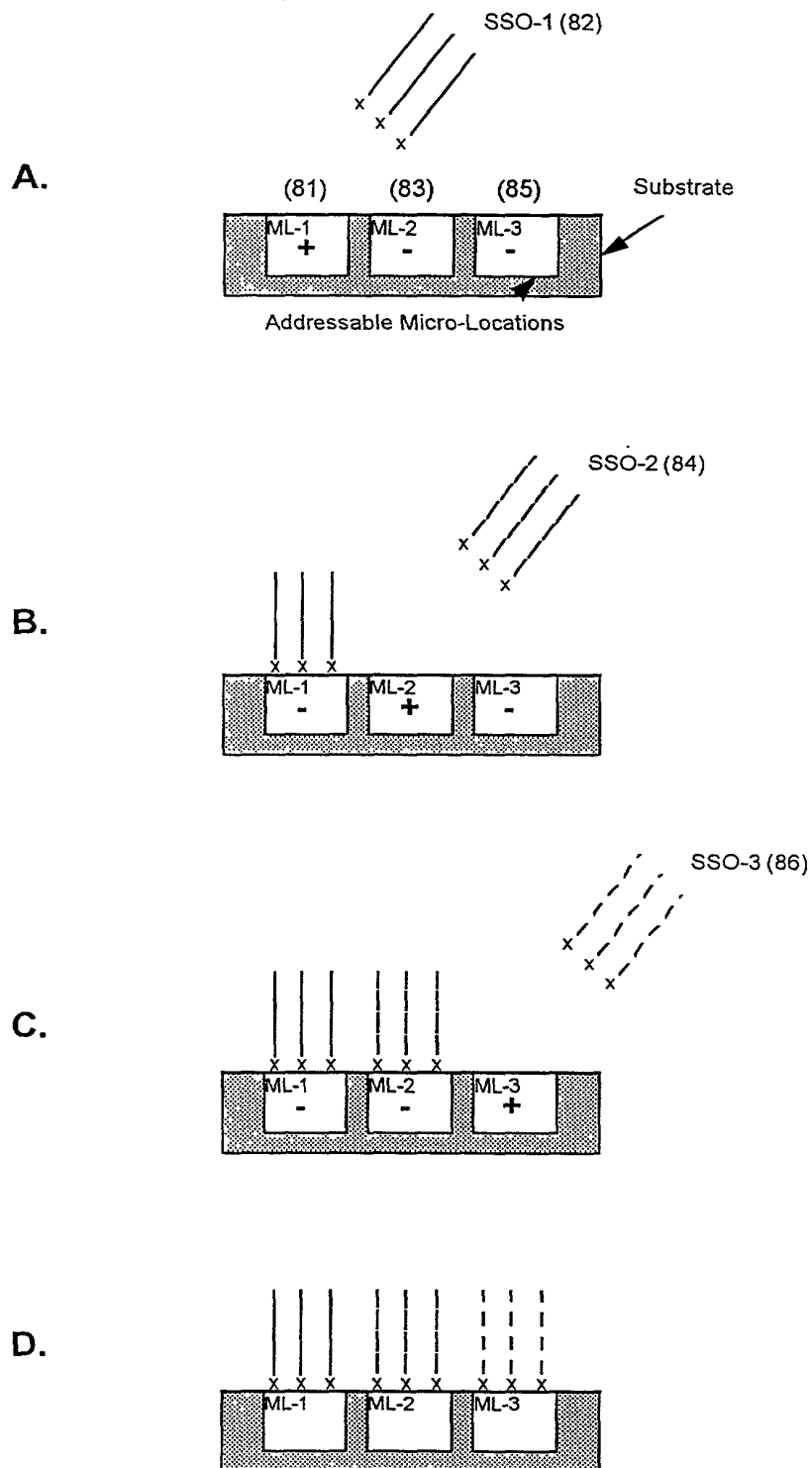


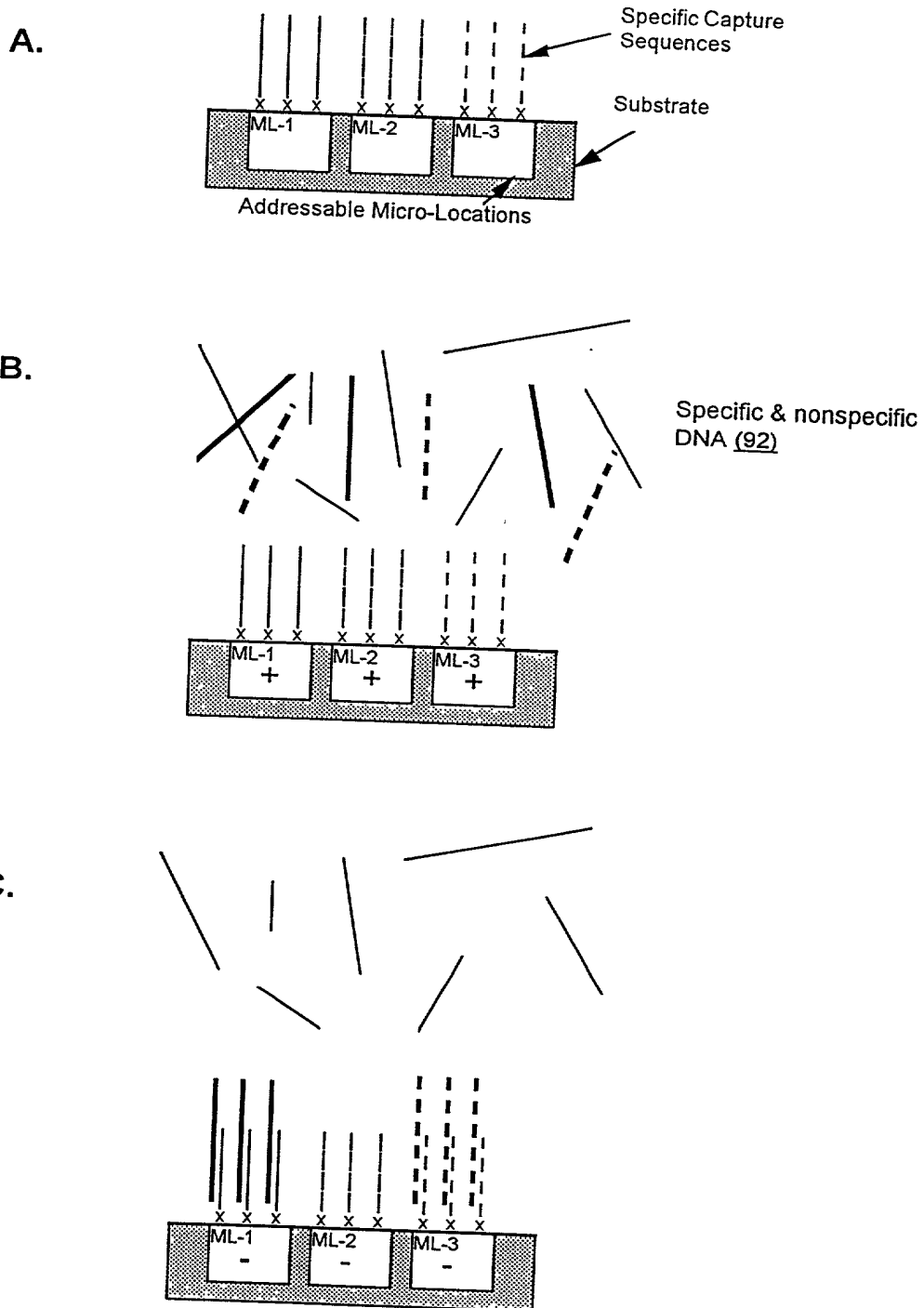
Figure 8: Electronic Addressing and Self-Directed Assembly of Device.



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Figure 9: Electronically Controlled Hybridization Process

(90)



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FO4220-4702T550

Figure 10: Electronically Directed Serial Hybridization Process

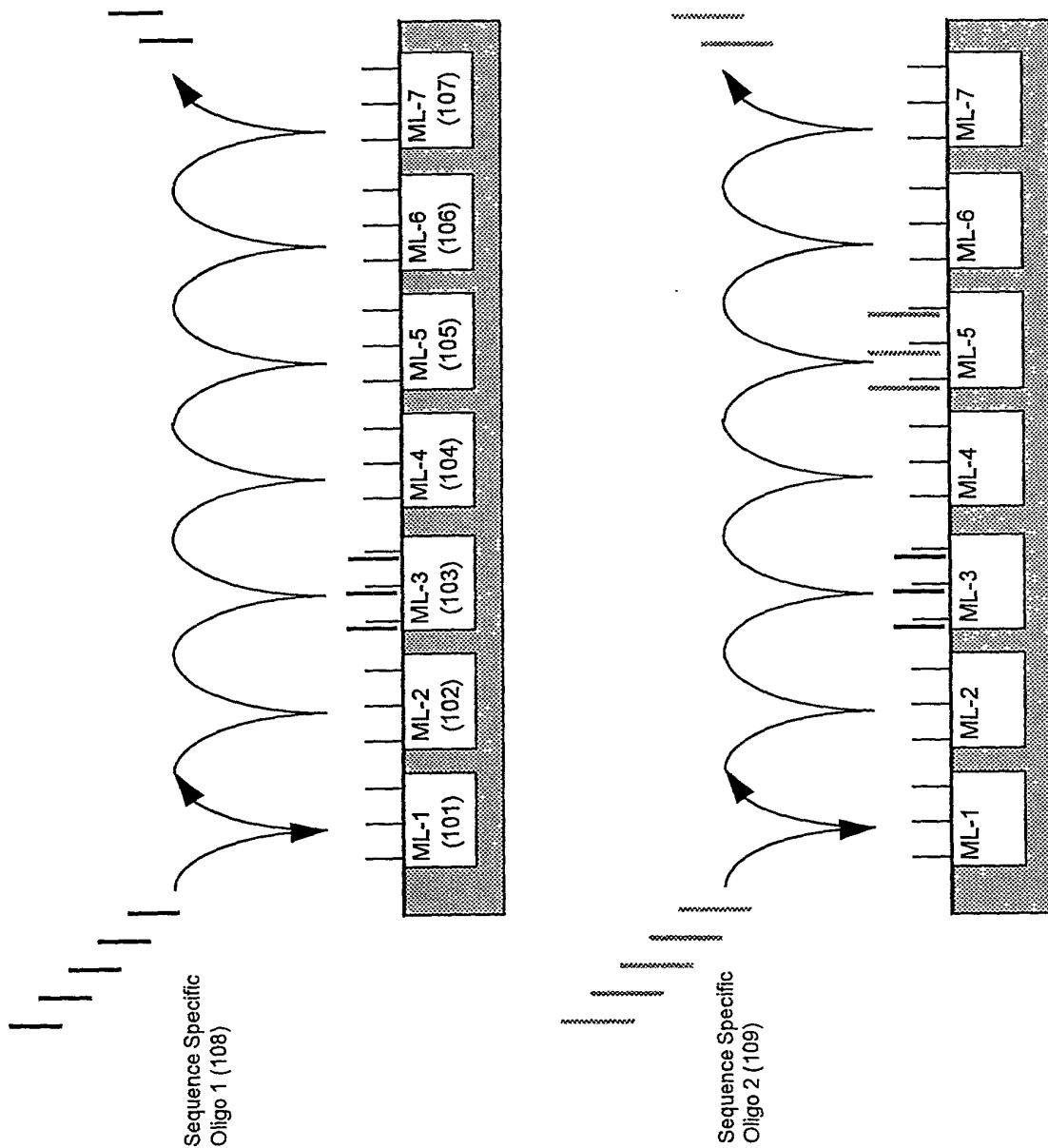


Figure 11: Electronic Stringency Control (ESC) of Hybridization Process

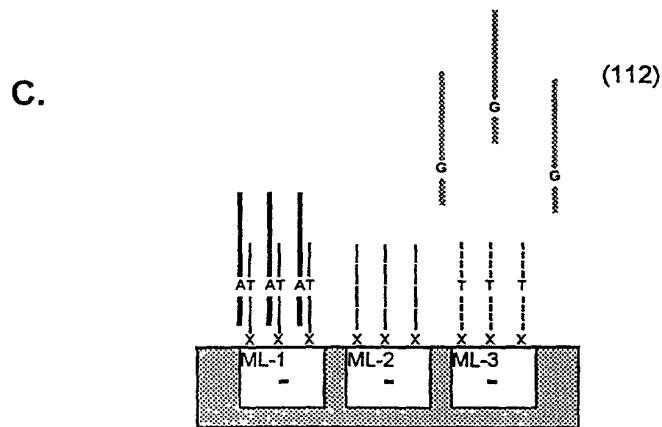
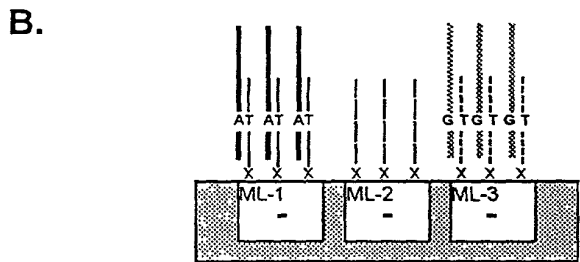
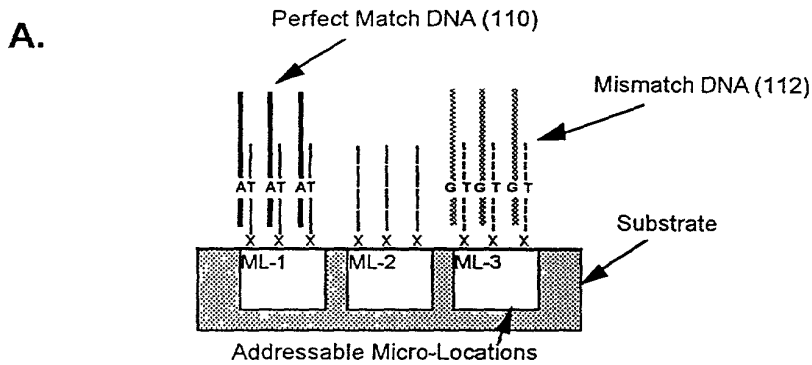
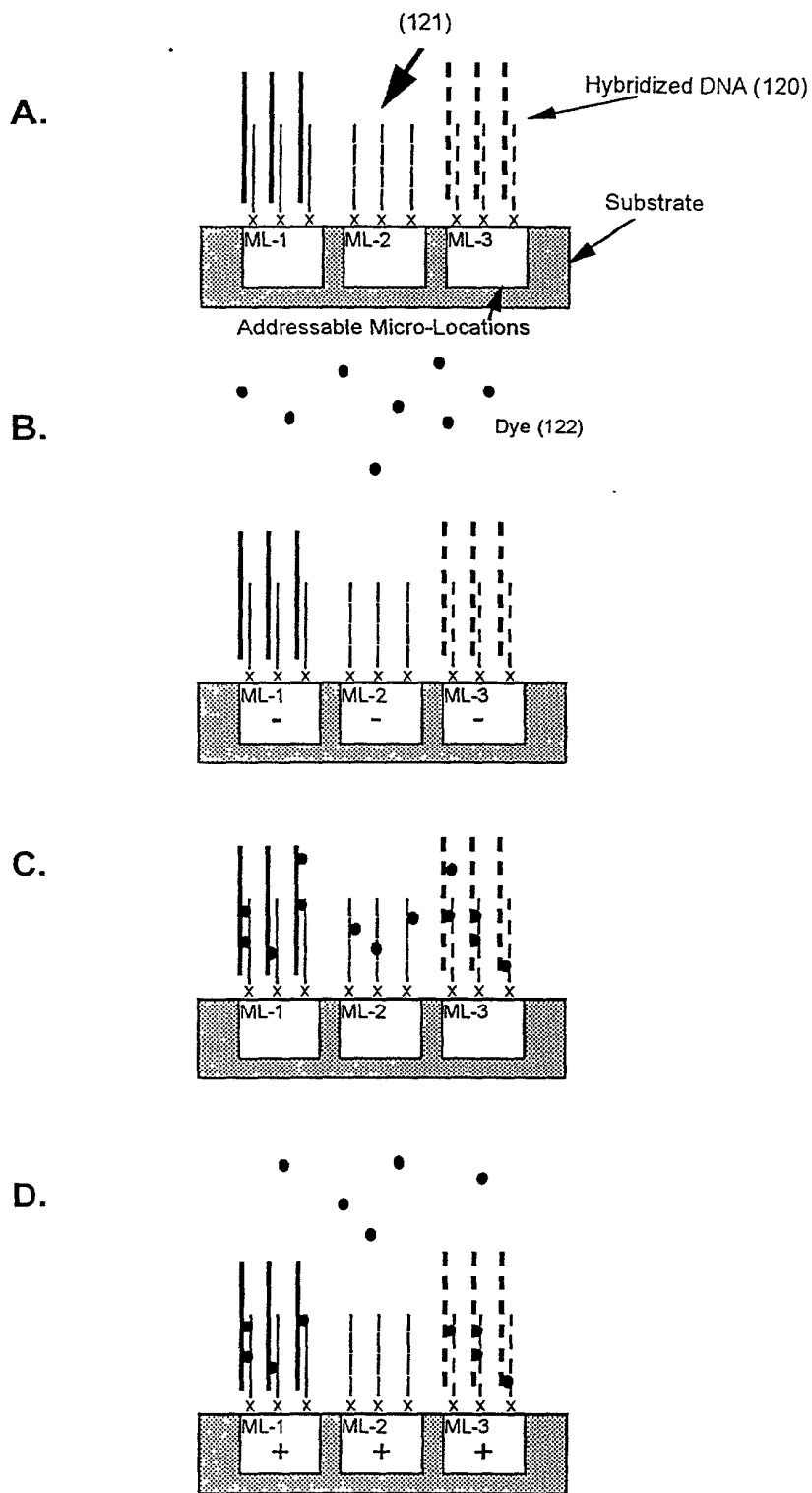
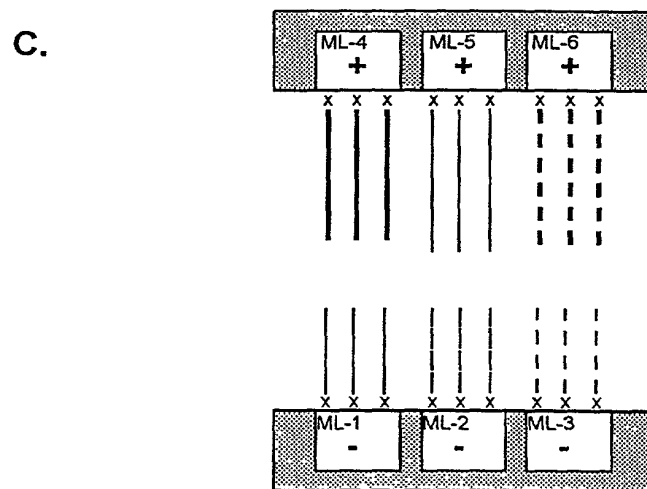
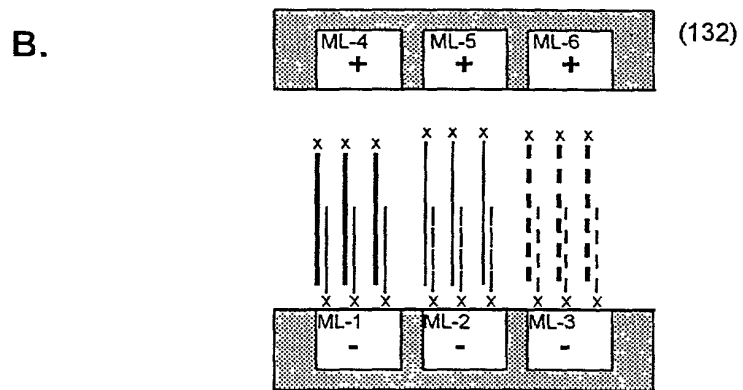
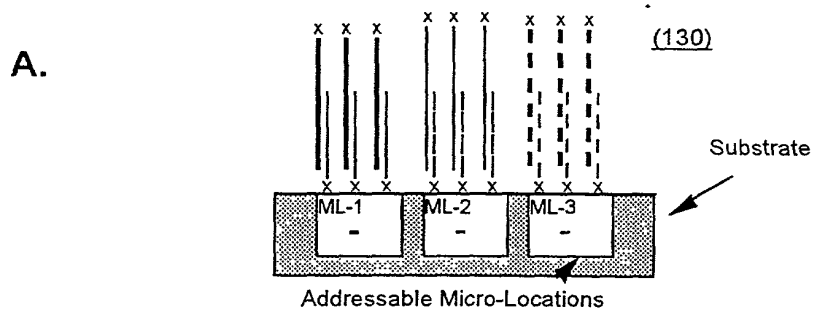


Figure 12: Electronically Controlled Fluorescent Dye Detection Process



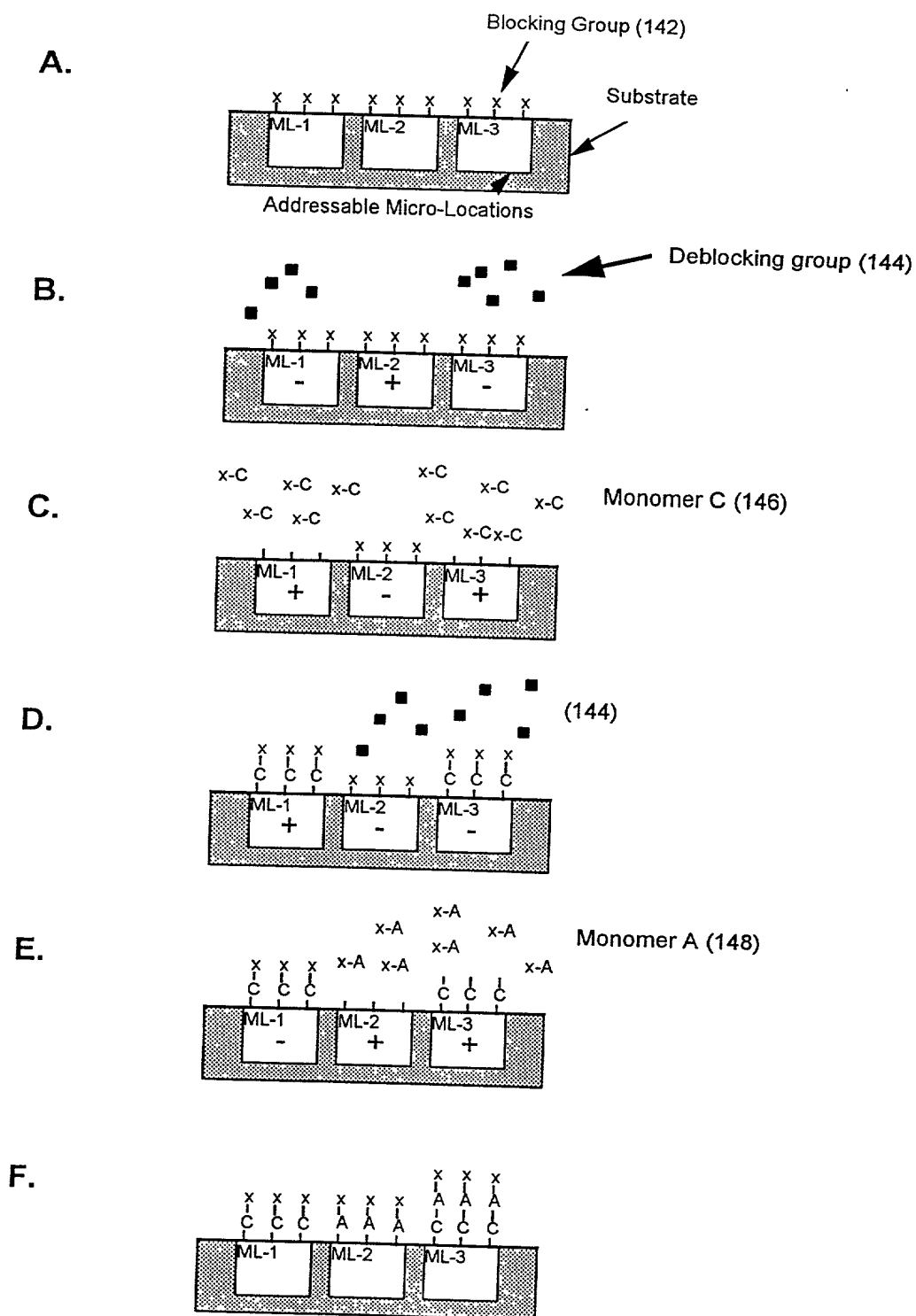
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Figure 13: Electronically Controlled Template Replication



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Figure 14: Electronically Directed Combinatorial Synthesis.



Relative Sensitivity for Mismatch Discrimination

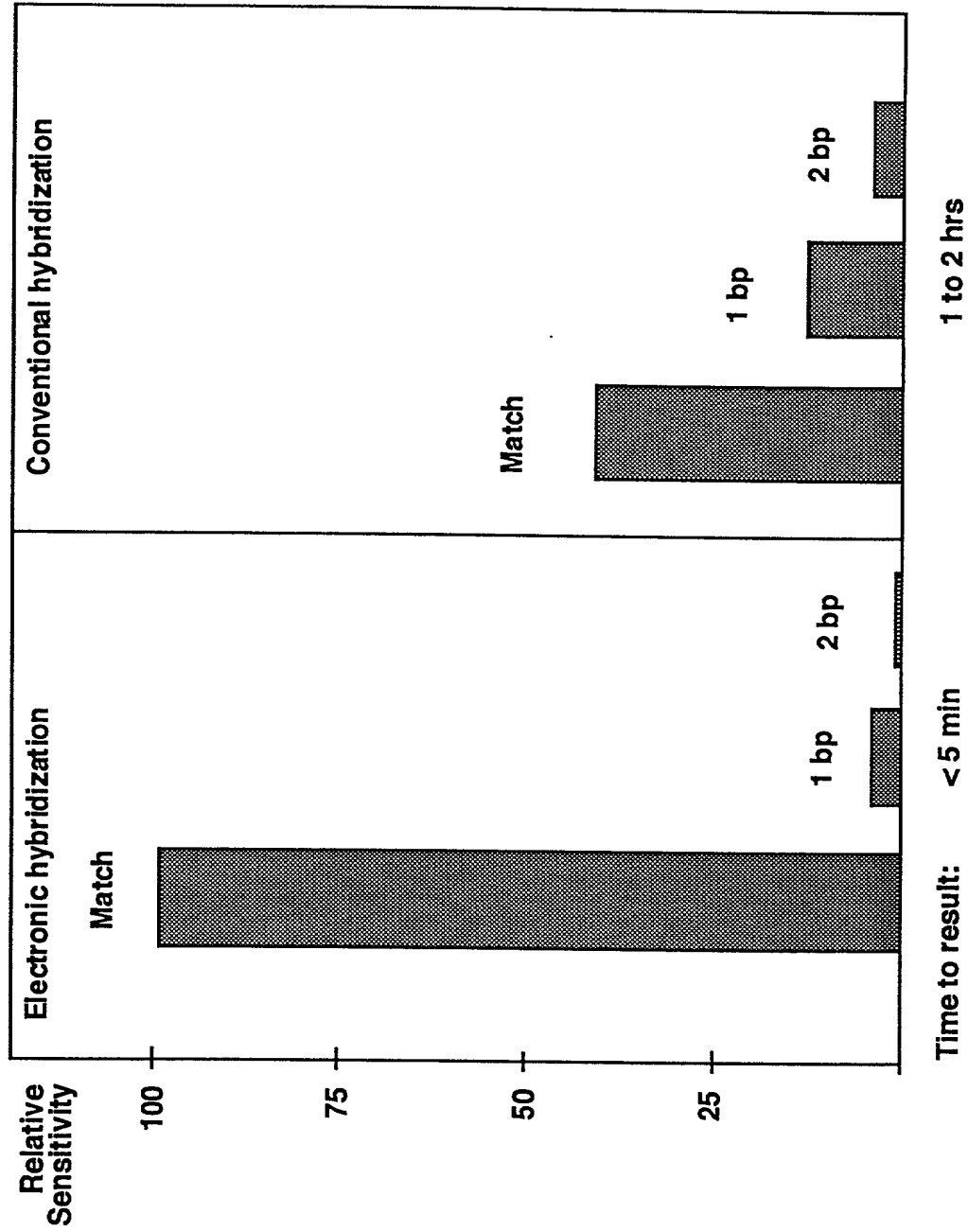
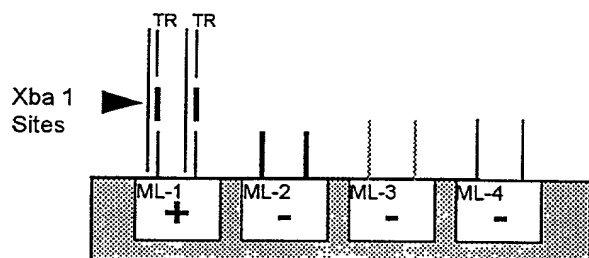
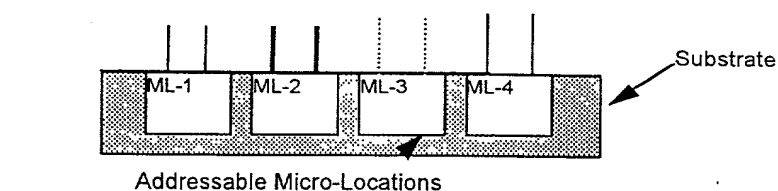
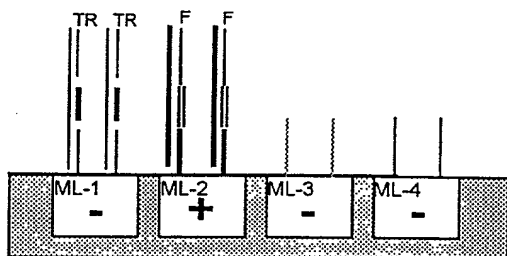


Figure 16

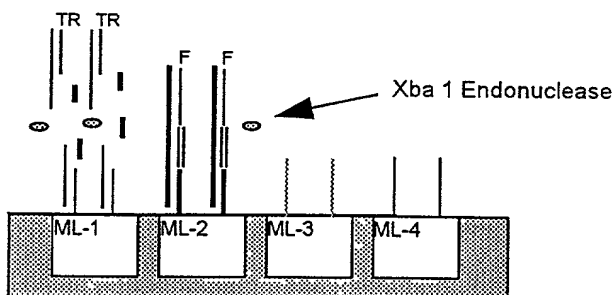
Electronic Restriction Cleavage



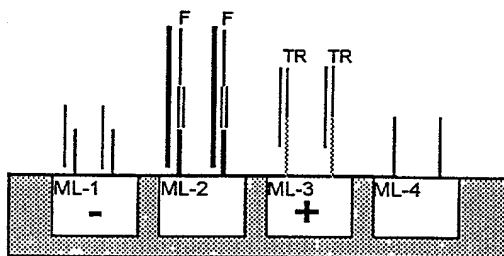
Address ML-1 with M13mp18 target, restriction probe and TR probe (Xba 1 site)



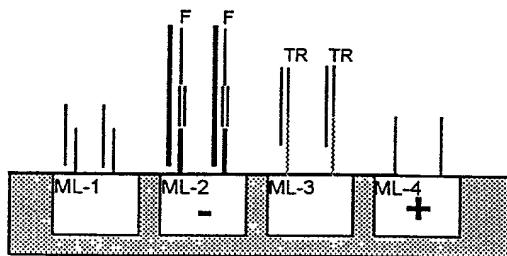
Address ML-2 with M13mp8 target, restriction probe and F probe (No Xba 1 site)



Xba 1 restriction digest at ML-1



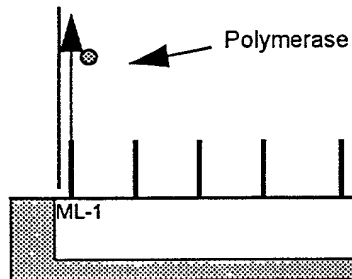
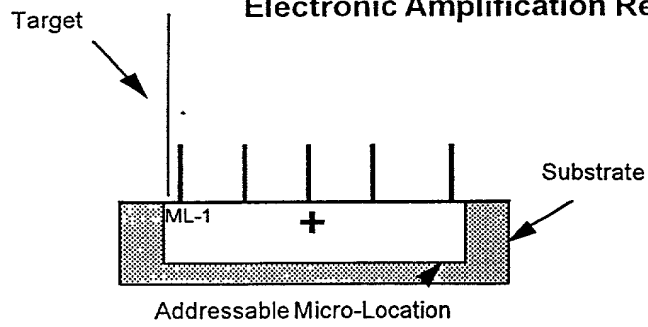
Restriction fragment moved to ML-3



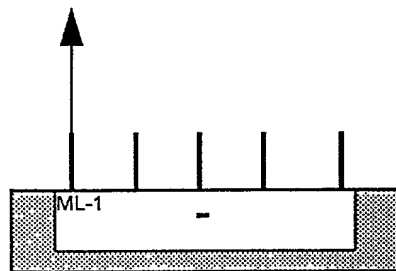
ML-2 not restricted by Xba 1

Figure 17

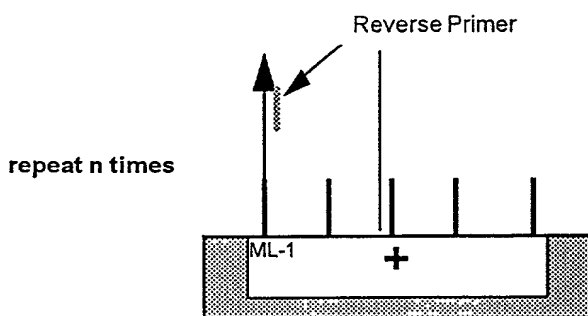
Electronic Amplification Reactions



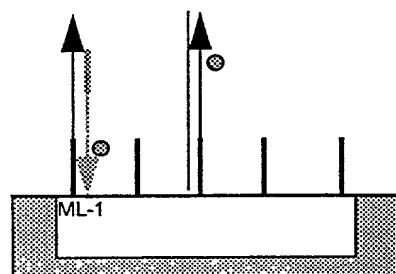
DNA polymerase extends capture sequence



Target electronically denatured



Reverse primer and target hybridized

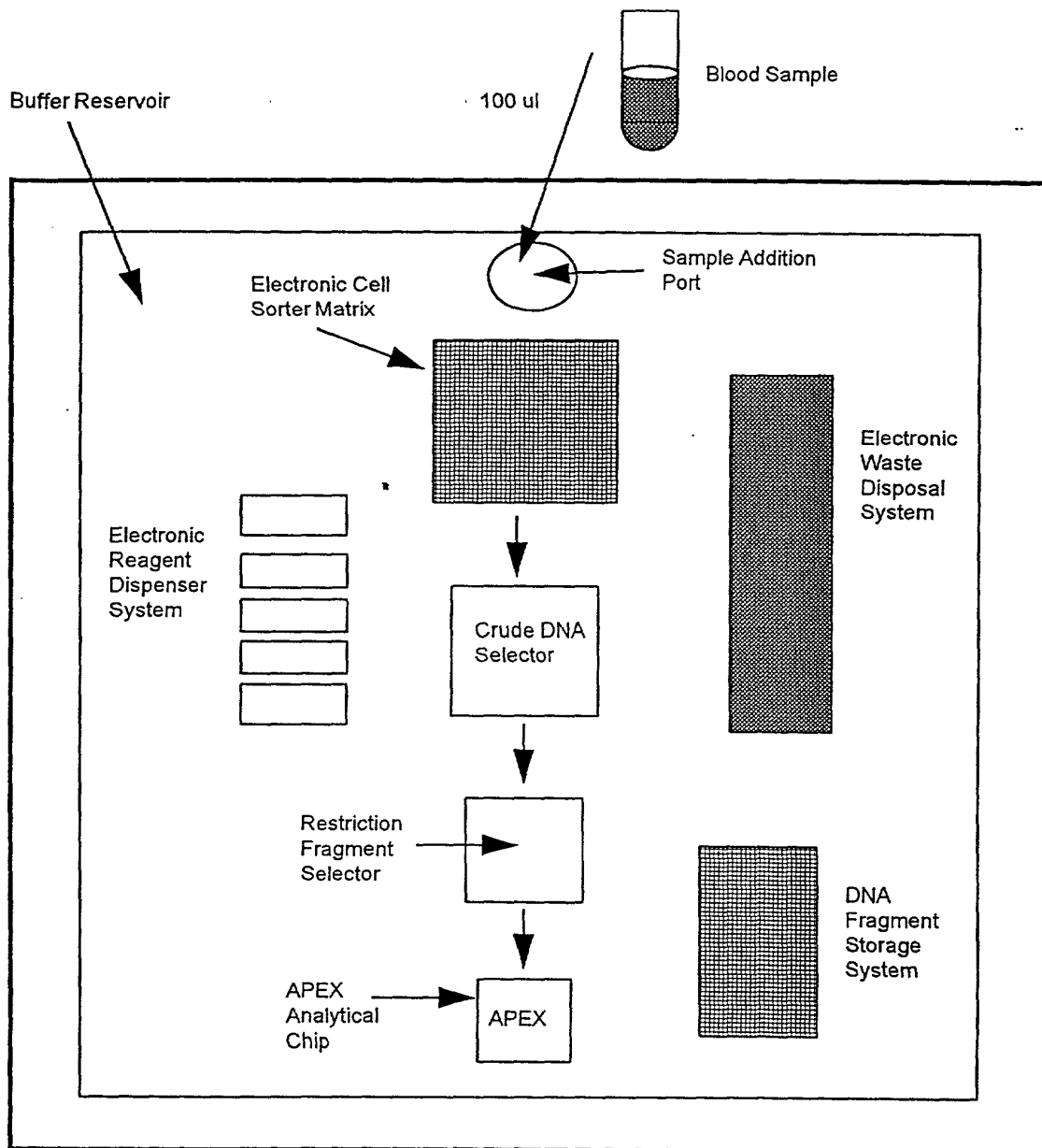


Extension by DNA polymerase

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Figure 18

Complete APEX System with Sample Preparation



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